

Anabolic Steroid Abuse



**National Institute on Drug Abuse
Community Drug Alert Bulletin**

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NIDA COMMUNITY DRUG ALERT

~Bulletin~

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National Institutes of Health

*U.S. Department of Health and Human Services
National Institutes of Health*

April 2000

Dear Colleague:

Since the 1950s, some athletes have taken anabolic steroids to build muscles and boost their athletic performance. Increasingly, other segments of the population also have been taking these synthetic substances. The Monitoring the Future study, an annual survey of drug abuse among middle and high school students across the country, showed a significant increase from 1998 to 1999 in anabolic steroid abuse among middle schoolers. During the same year, the percentage of 12th-graders who believed that taking these drugs causes "great risk" to health declined from 68 percent to 62 percent.

Studies show that, over time, anabolic steroids can indeed take a heavy toll on a person's health. Abuse of oral or injectable anabolic steroids is associated with increased risk for heart attacks and strokes, and the abuse of most oral anabolic steroids is associated with increased risk for severe liver problems, including hepatic cancer. People who share needles or use nonsterile injection techniques put themselves at risk for contracting dangerous infections, such as HIV/AIDS, hepatitis B and C, and bacterial endocarditis.

Anabolic steroid abuse can also cause undesirable body changes. Men may develop enlarged breasts and women's bodies may become masculinized. Both sexes can develop acne and hair loss.

This Community Drug Alert Bulletin summarizes some of the latest scientific information on anabolic steroids. NIDA also has established a Web site to provide scientific information about anabolic steroids: <http://www.steroidabuse.org>. As research produces new information, NIDA will continue to make every effort to quickly disseminate these findings via the Web site and subsequent Alerts. Our objective is to keep the Nation's communities up-to-date concerning the risks of abusing anabolic steroids and science-based approaches to preventing and treating such abuse.

Sincerely
Alan I. Leshner, Ph.D.
Director
National Institute on Drug Abuse

Anabolic steroids are:

- Synthetic substances related to the male sex hormones (androgens). They promote growth of skeletal muscle (anabolic effect) and the development of male sexual characteristics (androgenic effects), and also have other effects. (The term "anabolic steroids" will be used throughout this bulletin because of its familiarity, although the proper term for these compounds is "anabolic/androgenic" steroids.)
- Used by doctors to treat conditions that occur when the body produces abnormally low amounts of testosterone, such as delayed puberty and some types of impotence, and also to treat body wasting in patients with AIDS and other diseases.
- :Legally available in the United States only by prescription. Anabolic steroid abusers obtain drugs that have been made in clandestine laboratories (sometimes with poor quality control standards), smuggled from other countries, or diverted illegally from U.S. pharmacies.
- Distinct from steroidal supplements. In the United States, supplements such as dehydroepiandrosterone (DHEA) and androstenedione (street name Andro) can be purchased legally without a perscription through many commercial sources including health food stores. They are often taken because the user believes they have anabolic effects.

Anabolic steroid abuse is...

- Increasing among adolescents, and most rapidly among females. The 1999 Monitoring the Future study, a NIDA-funded survey of drug abuse among middle school and high school students across the United States, recorded that 2.7 percent of 8th-graders, 2.7 percent of 10th-graders, and 2.9 percent of 12th-graders reported having taken anabolic steroids at least once in their lives. These figures represent increases since 1991 of approximately 50 percent among 8th- and 10th-graders and 38 percent among 12th-graders.
- Probably widespread among athletes and would-be sports competitors at all levels, although few data are available to provide exact estimates of prevalence. Many anabolic steroid abusers are unwilling to report the practice, because the International Olympic Committee and many other amateur and professional sports organizations have banned anabolic steroids.

- Motivated in most cases by a desire to build muscles and improve sports performance. Some individuals are motivated by erroneous perceptions of their own bodies (that is, a mistaken belief that they look underweight or obese) and others by a desire to prevent recurrence of physical or sexual attacks they have experienced.

Anabolic steroids are taken...

- Orally as tablets or capsules (Anadrol® [oxymetholone], Oxandrin® [oxandrolone], Dianabol® [methandrostenolone], Winstrol® [stanozolol], and others); by injection into muscles (Deca-Durabolin® [nandrolone decanoate], Durabolin® [nandrolone phenpropionate], Depo-Testosterone® [testosterone cypionate], Equipoise® [boldenone undecylenate], and others); or by ointment preparations rubbed into the skin. Doses taken by abusers can be up to 100 times more than the doses used for treating medical conditions.
- In combinations, a practice called "stacking." Abusers frequently take two or more anabolic steroids together, mixing oral and/or injectable types, sometimes adding drugs such as stimulants or painkillers. The rationale for stacking is a belief—which has not been tested by science—that the different drugs interact to produce a greater effect on muscle size than could be obtained by simply increasing the dose of a single drug.
- In cyclic dosage regimens, a practice called "pyramiding." At the beginning of a cycle, the person starts with low doses of the stacked substances and then gradually increases the doses for 6 to 12 weeks. In the second half of the cycle, the doses are slowly decreased to zero. This is sometimes followed by a second cycle during which the person continues to train, but without drugs. Abusers believe that pyramiding allows the body time to adjust to the high doses, and the drug-free cycle allows time for the body's hormonal system to recuperate. As with stacking, the perceived benefits of pyramiding have not been substantiated scientifically.

Steroid abusers often do not realize that over time, these drugs can take a heavy toll on their health.

Health consequences associated with anabolic steroid abuse include...

- *In boys and men*, reduced sperm production, shrinking of the testicles, impotence, difficulty or pain in urinating, baldness, and irreversible breast enlargement (gynecomastia).
- *In girls and women*, development of more masculine characteristics, such as decreased body fat and breast size, deepening of the voice, excessive growth of body hair, and loss of scalp hair, as well as clitoral enlargement.
- *In adolescents of both sexes*, premature termination of the adolescent growth spurt, so that for the rest of their lives, abusers remain shorter than they would have been without the drugs.
- *In males and females of all ages*, potentially fatal liver cysts and liver cancer; blood clotting, cholesterol changes, and hypertension, each of which can promote heart attack and stroke; and acne. Although not all scientists agree, some interpret available evidence to show that anabolic steroid abuse-particularly in high doses-promotes aggression that can manifest itself as fighting, physical and sexual abuse, armed robbery, and property crimes such as burglary and vandalism. Upon stopping anabolic steroids, some abusers experience symptoms of depressed mood, fatigue, restlessness, loss of appetite, insomnia, reduced sex drive, headache, muscle and joint pain, and the desire to take more anabolic steroids.
- *In injectors*, infections resulting from the use of shared needles or nonsterile equipment, including HIV/AIDS, hepatitis B and C, and infective endocarditis, a potentially fatal inflammation of the inner lining of the heart. Bacterial infections can develop at the injection site, causing pain and abscess.

To encourage youths to avoid anabolic steroid abuse...

- Present a balanced picture of what these drugs can do for them and to them. Most adolescents know that anabolic steroids build muscles and can increase athletic prowess. Research has shown that failure to acknowledge these potential benefits creates a credibility problem and can actually make youths more likely to try the drugs.
- Make use of the authority of coaches and the team ethos. In the most promising program currently under study, coaches and team leaders are trained to educate team members about the effects of anabolic steroid abuse, both

desirable and adverse, in the general context of training. They also provide information about nutrition and, of course, exercise and other training techniques for improving performance without the steroid abuse by as much as 50 percent and also reduces alcohol abuse among teammates.

- It is uncertain whether drug testing programs can discourage anabolic steroid abuse. However, the first scientific studies of this practice are currently under way.

For more information about anabolic steroids and other drugs of abuse, contact:

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